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(12) **United States Patent**
Mace et al.(10) **Patent No.:** US 9,410,953 B2
(45) **Date of Patent:** Aug. 9, 2016(54) **USE OF NON-NUCLEOPHILIC ADDITIVES FOR REDUCTION OF SURFACE MORPHOLOGICAL ANOMALIES IN PROBE ARRAYS**(75) Inventors: **Charles R. Mace**, Auburn, NY (US); **Amrita R. Yadav**, Rochester, NY (US); **Benjamin L. Miller**, Penfield, NY (US)(73) Assignee: **University of Rochester**, Rochester, NY (US)

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(58) **Field of Classification Search**CPC B01J 2219/00533
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See application file for complete search history.(56) **References Cited****U.S. PATENT DOCUMENTS**

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The present invention relates to a formulations and methods for coupling a reactant (or probe precursor) to a functionalized surface for purposes of forming an arrayed sensor. This method includes the steps of: providing a surface having a reactive functional group; and introducing onto the surface, at a plurality of discrete locations, two or more compositions of the invention, which include a different reactant (probe precursor) and a non-nucleophilic additive, wherein such introduction is carried out under conditions effective to allow for covalent binding of the reactant to the surface via the reactive functional group. This results in a probe-functionalized array that substantially overcomes the problem of surface morphological anomalies on the array surface. Use of the resulting arrays in various detection systems is also encompassed.